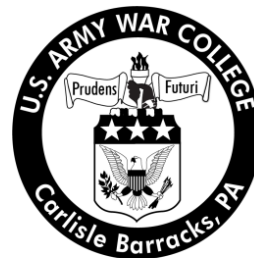


Strategy Research Project International Fellow

Obesity: A Strategic and Leadership Challenge for the Chilean Army

by

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United States Army War College
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Abstract

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Obesity has been declared a “pandemic” of the 21st Century. However, this “pandemic” is not spread by viruses or bacteria but appears directly related to cultural changes in lifestyle, physical activity, and nutrition that continue around the world. It affects both individuals and society; directly impacting and affecting the psychological and physical health of a nation while producing a tremendous economic burden as increasing numbers of citizens become overweight or obese. The end result is that fewer members of society are fit enough to serve in military service and the nation incurs an increased cost of healthcare. While obesity is a complex problem, it requires global action to confront this threat to the community of nations within an interconnected world. The Chilean society and military are closely linked in preserving both national military readiness and health of the nation. Chilean military leaders can provide a model to help Chilean society confront this threat with thoughtful, realistic strategies to reduce this long-term risk.

Obesity: A Strategic and Leadership Challenge for the Chilean Army

Obesity has been declared a “pandemic” of the 21st Century and the worldwide trends for obesity are increasingly alarming.¹ However, this “pandemic” is not spread by viruses or bacteria but appears directly related to cultural changes in lifestyle, physical activity, and nutrition that continue around the world, increasing to one billion obese individuals by 2030.² It is clear that these trends affect both individuals and society; directly impacting and affecting the psychological and physical health of a nation while producing a tremendous economic burden as increasing numbers of citizens become overweight or obese. The end result is that fewer members of society are fit enough to serve in military service and the nation incurs an increased cost of healthcare.

While obesity is a complex problem, given its global reach, it requires global action. Every nation must understand and confront this threat to the community of nations within an interconnected world.

The Chilean society and military are closely linked in preserving both national military readiness and health of the nation. Therefore, Chilean military leaders can provide a model to help Chilean society confront this threat with thoughtful, realistic strategies to reduce this long-term risk.

Obesity: The Rising but Silent Threat

Obesity trends suggest that individuals within a society tend to silently progress from normal weight to overweight. This slowly developing characteristic produces the perception that the increase in weight is a *normal* change in one’s physical size which in turn, because of the increased weight, reduces both interest and action associated with physical activity. Of particular importance is that these reduced abilities appear in several physical domains of particular relevance to military operations. For example, as

an individual moves from being overweight to obese, most experience a reduced ability to complete even simple physical tasks; experience other medical problems such as reduced mobility in knees and ankle range of motion; reduced aerobic capacity and endurance; a negative impact on sleep and alertness, and other related problems.

The impact on a national and/or military health care system, both in costs and utilization rates, is also impacted by those who are overweight or obese. For example, being overweight increases the risk for developing what are referred to as non-communicable diseases (NCDs) such as heart disease and stroke, cancer, diabetes and chronic lung disease. In fact, around the globe these four diseases account for more deaths than do other infectious diseases.³ If we use the United States (U.S.) as an example, we see that “NCDs cost the U.S. economy billions of dollars each year, and limit the activities of tens of millions more Americans. Low- and middle-income country economies are also set back by NCDs through increasing demands on health care systems and lost productivity.”⁴

Lifestyle factors, and the daily choices that individuals make, can help explain some of these trends. For example, of the four NCDs described above, they all “share the common risk factors of tobacco use, unhealthy diets, physical inactivity, and harmful use of alcohol, as well as high blood pressure and cholesterol.”⁵

For the specific risk areas of being overweight and obesity, the two main factors that are related to their development are reduced physical activity and an unbalanced food intake (e.g., consumption of excess fat, high intakes of sugar, overall calories, and sweetened beverages). Of particular interest to military organizations where stress is

high, and rapid, ongoing operations is the norm, this type of diet has been associated with producing some pleasure or tension reduction.

If the social culture and technological advances become increasingly champions of convenience over activity, then societies (and militaries) will increasingly find that fewer and fewer individuals will maintain an appropriate level of physical activity. Moreover a significant amount of advertizing⁶ seems to try and sell their products by generating the belief that eating certain foods or drinks will cause greater social acceptance and personal wellbeing.

Therefore the essence of increasing rates of both overweight and obese members of a country's population and its military significance creates a complex and complicated problem that challenges strategic leaders in all countries. It is increasingly recognized that the consequences of this challenge are not just confined to the area of physical health but also directly impacts the national economies, social effects, and even national security threats (e.g., with fewer citizen's with the fitness levels required to serve). In the past decade, a number of nations have taken steps to address this growing problem with Chile being one of them. However, neither Chile nor other countries have had good results with national statistics for obesity since these rates are continuing to trend upward.

Even if militaries, such as the Chilean Army, *do not currently* have a problem with military members who are overweight or obese, they need to understand the overall global trend of obesity since militaries represent and draw their members from their overall national societies. In the case of the Chilean Army, while apparently there has been no serious impact with overweight and obesity problems; there are no publicly

available statistics that help to establish or understand the true nature of the current situation. That said, there is no reason to suppose that the Chilean Army will remain completely immune from an overall national and global trend so it must remain vigilant to this growing threat.

While in the Chilean Army there are many different methods for weight and fitness control, a prudent military strategy demands that we carefully assess the trends and take steps to mitigate the risk. It is insufficient to just focus on our current active duty military personnel. Given the complexity of this problem, and recognizing the root of this problem is outside of the military, we must take steps to address this risk with a national strategy that protects both our national Chilean interests by maintaining an Army that remains fit and healthy enough to serve those interests.

The success of that long-term strategy will require addressing the social environment of Chilean Army personnel. The overarching goal is to achieve a change in cultural behavior of military members and their immediate environment. While this may seem a simple and straightforward, to sustain the change will require a change in how our military leaders view fitness, health, and the challenge of obesity to both our national and military readiness. Undoubtedly, the active and committed participation of strategic leaders is needed to create the necessary organizational climate to produce permanent changes to protect the Chilean nation and its Army from this difficult and silent threat.

Chile: Current Situation

Chile is a country that is well known for its bountiful export of fruits and vegetables to both the U.S. and European Union markets. What is interesting is that although Chile is known for an abundance of healthier fruits and vegetables, the societal

trends indicate that for the last two decades Chilean's, like the rest of the world, are experiencing similar trends of overweight and obesity. The statistics reveal an increasing number of the Chilean population is gaining weight every year, “with a quarter of Chileans registering as obese, [and] the Andean country’s residents are now almost as overweight as the British, and quickly catching up to North Americans.”⁷ Most determinations of who is overweight or obese depend on the use of the Body Mass Index (BMI). For example, an adult with a BMI between the ranges of 25 to 29.9 is considered overweight, while those with a BMI range of 30 or more are considered obese.⁸ While only 25% of Chilean adults are obese, the overall statistics for those who are overweight or obese quickly increases to 54%. For example, according with the most recent Chilean National Health Survey, approximately 40% of the Chilean population is overweight when members of the population who are 15 years and older are included (Figure 1). That represents a 2-3% increase in just 7 years.

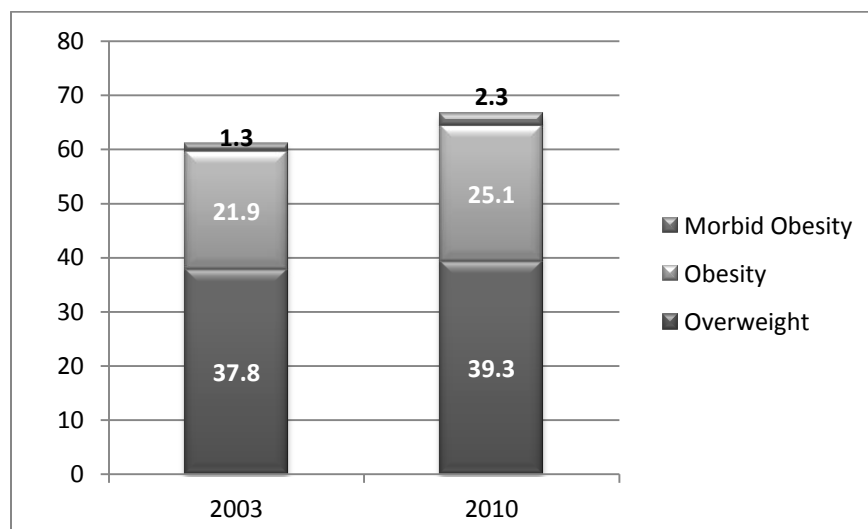


Figure 1. Chilean National Health Survey 2010, Overweight⁹

Another critical factor of great relevance to the Chilean Army is the increased number of children who are affected by becoming overweight and obesity. According to

the Chilean National Health Survey, approximately 32 per cent present of children, six years old and under, are reportedly overweight or obese (Figure 2). These findings are strengthened by other recent studies that also found “almost a quarter of first-graders in Chile are clinically obese.”¹⁰ The Chilean Government has adopted a number of different strategies in an effort to reduce these trends but the statistics continue to reveal a disturbing and increasing trend upwards every year.

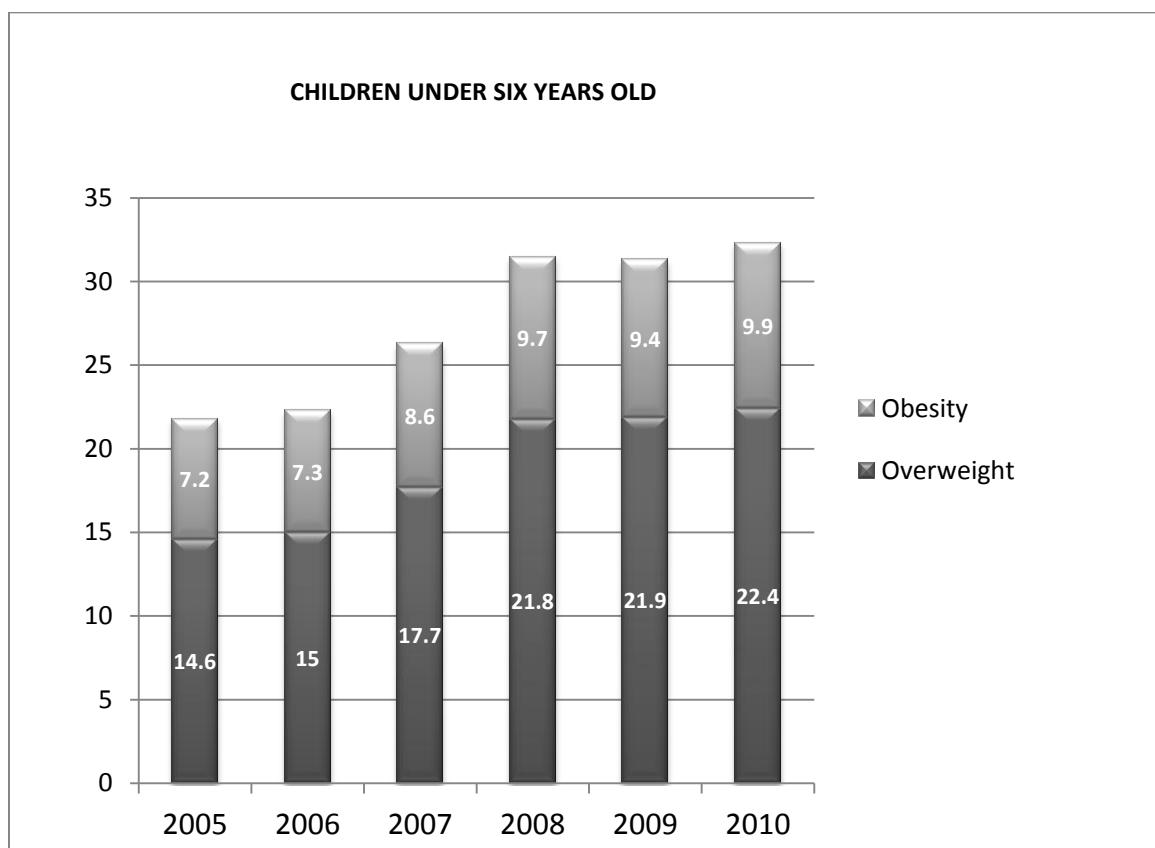


Figure 2. Overweight and Obesity in Children Under 6 Years Old¹¹

Although Chile ranks 59th in population¹² compared to other countries in the world, Chile currently is ranked sixth overall internationally in children who are overweight and obese between the ages of 5 to 17 years; falling just behind Greece, the U.S., Italy, Mexico and New Zealand.¹³ The results are even more concerning when

considering that more than 32% of these children are less than six years of age. Not only does this create concerns for the health and well-being of the Chilean national population, it also indicates that decreasing numbers of its citizens will be physically fit enough to serve, with one study finding just one in 10 students in the eighth grade physically fit.¹⁴

Chilean National Economic Policy and Growth

Chile has demonstrated remarkable adaptability and economic growth. In the 1960s, Chile had high infant and maternal mortality rates, as well as a significant incidence of infectious diseases and malnutrition. However, in the past fifty years Chile has brought about dramatic changes to its national economy and standing in the world. How did this happen? It was due in large part to innovative national policies and strategies that were started in 1985 after Chile implemented a new economic policy where the goal was open markets and an increase economic interchange. Currently, Chile is highlighted among other countries in Latin America by its economic growth, and by the stability of its social and democratic systems.

However, like other modern nations, with the increases in economic conditions has come an increase in the lifestyle conveniences that contribute to inactivity and becoming overweight. “The dramatic increase in obesity in Chile is very closely linked to our model economic development, which brought tremendous technological development, meaning that [many more Chileans] are now brought to and from school in motor vehicles, and there is far more access to television and computers.”¹⁵

But economic development per se is not totally responsible for increased weight among Chilean people; there are other contributing factors like globalization and

information technology that are important to understand if an overall strategy is to become effective in reducing the overall risk.

Some of these factors do operate with an interdependency with economic development and growth because they too are affected by the country's ability to distribute their resources between their inhabitants. For example, with economic growth citizens now have more resources and opportunity to expend those resources on goods and services that were previously impossible and/or unimaginable. These include such goods and commodities, both tangible and intangible, like education, travel, cars, and personal technology. Globalization has also dramatically increased the chances to discover other cultures and the interchange of goods has been the main goal of the open market. In addition, both the global economy and the increasing availability of information technologies have destroyed the physical borders; allowing personal contact by voice and image in "virtual" but real time. All of those factors seemed to have impacted on most cultures in similar ways around the world.

Chile and Factors that Affect Body Weight

In Chile where "the proportion of town-dwellers in Chile rose from 75 to 86 per cent between 1970 and 2000"¹⁶ there are fewer physical demands for activity. In essence, reduced physical activity and a sedentary lifestyle is now the norm with the result that "over 90 percent of Chileans engage in very little physical activity" (e.g., going straight to work and then back home, traveling by public transportation, and then remaining more sedentary at work sitting at their desks and at home watching more television).¹⁷

Clear evidence shows that "obesity is caused by a chronic energy imbalance involving both dietary intake and physical activity patterns."¹⁸ The relation between

energy imbalances has a big impact in societies where physical activity is not a habit.

Furthermore, it is well known that:

If we eat too much and/or exercise too little, we will get fat. However, the increasing prevalence of weight gain and obesity is not seen to result solely from overconsumption and inactivity, but from range of environmental, social, and behavioral factors that interact to determine energy intake and expenditure.¹⁹

In the last ten years several innovations and urban interventions have been made in several of the larger cities within Chile. These interventions include such things as increasing (encouraging) more bicycles on the roads; the building of new parks and green (i.e., grassy) areas and other areas dedicated to letting people engage in more physical activity. Although the benefits offered by these innovations are clear, the response by the people had been slower than hoped for.

However, there is some evidence that attitudes and behaviors may be changing. For example, running competitions are increasingly in fashion with both younger and older adults. During December 2012, there were sixty-two different running competitions within Chile, with seventeen of those organized within the capital of Santiago.²⁰

But running competitions are not enough. For a long time, the Chilean culture has seen physical activity as “just for professionals” or for individuals who were either narcissistic or egocentric. Cultural change is slow but fortunately Chile governmental campaigns are now increasing awareness and creating a “national identity” and “conscientiousness” within the Chilean people to “start moving” and spend time engaging in any physical activity to promote national health.

While some progress is being made, the overall current results are not very encouraging. According to the results of Chilean National Health Survey(NHS) 2010, compared to the NHS 2003, the sedentary rates did not significantly change with 89.4%

sedentary in 2003 as compared to 88.6% in 2010 (Figure 3). What is perhaps even more concerning is the high number of women who remain sedentary, almost 93 per cent of those surveyed.

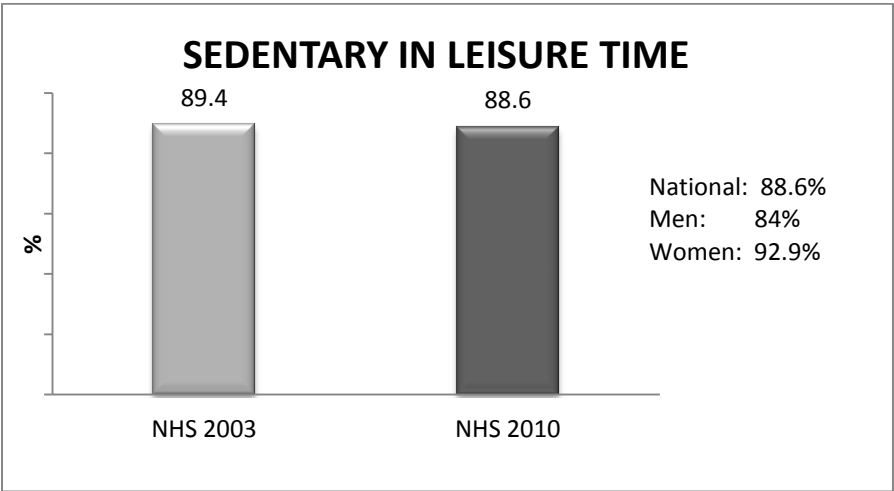


Figure 3. Sedentary In Leisure Time in Chile²¹

The latest NHS also reveals the impact of education level and social status with almost 97% of those who are less educated reporting they are sedentary during leisure time (Figure 4). These data reveal the importance of the relationship between education and physical activity and may help account for and explain the higher than average rates of sedentary activity among those with lower education²² and income levels.

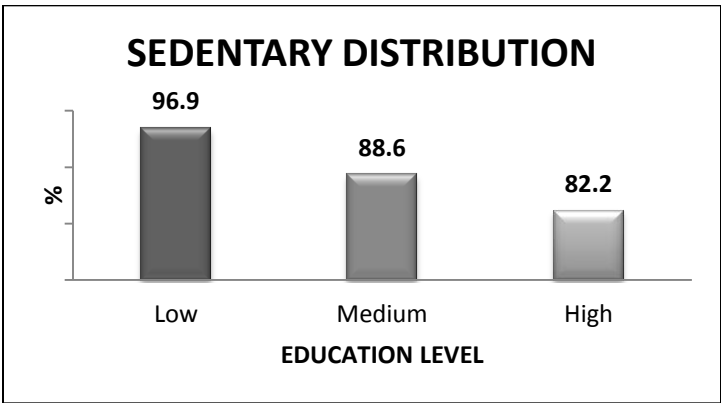


Figure 4: Sedentary Activity Level by Education Level²³

Chilean Diet as Contributing Factor

Activity alone cannot adequately account for or explain the problem. Therefore, any changes within the activity levels must be complemented by changes in the traditional dietary and nutritional status. For example, the Chilean population has also experienced an increase in the total number of calories consumed which also increase the chances to gain more weight (in the absence of activity level increases). This is not unique to Chileans since:

The fattening of Latin America, like Chile, follows global patterns that have rendered 1.5 billion adults worldwide overweight or obese: Women are working outside the home, free trade has meant easy access to processed foods and sweetened beverages, jobs are more sedentary, and kids have moved from the soccer field to the television set. And with incomes rising in low- and middle-income countries, obesity is something that developing-world politicians will increasingly have to battle as food and beverages manufacturer's eye new markets.²⁴

However, as noted earlier, the traditional Chilean diet was historically based mainly on vegetables, fruit and fish. That started to gradually change from the middle of the 1980s to present day.

Since mid-1960s, the government of Chile aggressively developed and led programs to address the high rate of infant mortality, when at that time the child malnutrition was the most frequent cause of death. As an example of the effectiveness of these programs and their emphasis on proper nutrition, the infant mortality rate was dramatically reduced from 106.4 per thousand live births in 1960 to 7.8 per 1,000 in 2003. These programs involved the distribution of milk in schools, rice in public health centers and promoted the increased consumption of cereals and carbohydrates, such as chickpeas, lentils and beans. The latter were admittedly one of the meals increasingly being served in the military barracks for more than three decades.

With the country's economic development programs that have been in place since 1985, Chile was increasingly viewed as a great investment opportunity for large fast food companies with the first McDonald's restaurant opening its doors in November of 1990.²⁵ However, years before McDonald's came into Chile; several national companies had already begun to imitate the style and design of other global fast food enterprises. These fast food restaurants both helped create and were created by a social phenomenon because this kind of food was previously seen only through television and in the cinema.

Another social factor that was one of the most important food-related changes that also impacted on nutritional habits within the Chilean family structure and society was the increase of women in the labor force of the country. As the population within the cities increased, leading to more congesting, increased travel times delayed arrivals to home in the evening, reducing the time to prepare meals for the family. Consequently, the trend has been to replace the traditional diet by products frozen and ready-to-serve, which usually maintain a higher level of unhealthy fats and sodium, along with an increase in the consumption of sweetened carbonated beverages which have high levels of sugars.

As a consequence, carbonated beverage consumption in Chile is high, with Chilean consumption averaging 111 liters per capita per year (with Chile third behind the U.S. and Mexico).²⁶ Thus, carbonated beverages have replaced water consumption that was the most common Chilean drink, followed closely by fruit juices during the summer months. Young Chilean adults who were born in the 1990s have grown up with carbonated beverages setting inside their refrigerators and see drinking them as a part

of their culture. This social/cultural phenomenon is so strong that supermarket groups and other companies in the food industry promote and sell their own carbonated drinks cheaper than the more traditional ones, but all of these products continue to share a common factor: a high level of sugar and the associated calories.

Finally, another potential social factor that may have exacerbated the problem is the distribution for the time of daily meals within the Chilean culture. Historically, within the Chilean culture the main meal of the day was always lunch, usually consisting of at least two dishes, a salad and fruit for dessert. Breakfast was a light meal consisting of bread, milk, tea or coffee and some cereal especially in children. Dinner usually consisted of just a sandwich with coffee or tea. In addition, the pace of life has decreased the time available for lunch; with the decreased time compensated for by the convenience and increased option and availability of fast food for many people.

The resulting problem is that most Chileans have not substantially improved the quality and amount of breakfast and dinner while increasing their fast food intake which increasingly has led to an unbalanced dietary intake. Consequently, “between meal” snacks are increasingly “needed” which usually consist of sugary or high fat levels which allow for quick increases in satiety for a few hours, but without any nutritionally significant contribution. While these “small changes at a population level are extremely important” it is the “big changes at a local level, where multiple factors may combine to generate unexpected, unintended and undesirable outcomes.”²⁷ Consequently the high calorie intake and low physical activity have inevitably produced increased weight gain among Chileans. “If you consume more calories than you expend, those extra calories

will be stored primarily as fat. Dietary fat is converted into body fat more efficiently than dietary proteins or carbohydrates.”²⁸

Although dietary intake and physical activity are the main causes of overweight and obesity, there is scientific evidence that associates eating disorders with psychological reasons. Considering all the causes or factors associated with overweight and obesity fundamentally highlights that:

The importance of environmental and social factors in the prevalence of weight gain and obesity...is not simply one of convincing people to eat a more nutritious diet – albeit, a more positive message that convincing them to eat less – and to take more exercise. Rather, the task is one of addressing the various ways in which contemporary societies have come to constitute what is referred to as an obesogenic, or obesity promoting, environment.²⁹

Obesity Effects and Their Impacts in Chile

The economic costs associated with the health care cost related to obesity are important considerations for the overall national security of Chile. First, Chile has a mixed health system (public and private) with increased consultations and treatments having a direct impact on the economic stability of these systems. In the case of the public health system, increasing its role requires increasing the national health budget at the expense of other national needs; thereby impacting other national development plans. In addition, any increase in the rate of national diseases reduces or limits the availability of the active labor force, slowing or stopping the economic growth rate, with this effect impacting all sectors of the country. These concerns, coupled with the rising childhood obesity rate projected for the next 20 years, pose serious threats to both national economies and to military services that depend on young, health recruits to fill their ranks. This is one of the most powerful reasons why there is international consensus on promoting *Obesity Prevention*.

Individuals and their financial security are also threatened by increased costs of health plans (private system), prescription drug costs, and the resulting reduced salary if absent from work due to health problems, along with other costs associated with transportation and treatment, and reduced employment opportunities. These concerns disproportionately impact on the lower socioeconomic groups where lifestyle-related diseases tend to occur at a higher rate.

Another important consideration is the impact on the national identity and the effect on the mental health of the population since it is reported that “obesity can lead to mental anguish as a result of poor body image, social isolation, or social discrimination.”³⁰ This effect may be particularly evidenced in children who lose mental strength required to reduce weight, and they “give up,” accepting their condition without hope of future improvements. Considering that approximately 80% of obese children become obese adults³¹, in addition the high rate of childhood obesity in families of obese parents, there is growing concern about how this upward problem trend will become increasingly manifested in the bodies and the minds of Chileans.

The U.S. has recognized this vulnerability and has been increasingly vocal about how obesity is fast becoming “an epidemic that threatens national security”³² due in large part to the reduction of youth who are no longer eligible for recruitment into the U.S. armed forces because of their medical or physical unfitness. While this effect has not been mentioned publicly in Chile, the trends suggest a similar concern is just over the horizon. As with any threat, Chile should not allow the threat to become realized as a threat to its national security. Strategies to address and mitigate this risk are provided below.

Chile in Action

Since 2006 the Chilean government has implemented its *Global Strategy against Obesity* (EGO).³³ This strategy establishes five major areas for action: The health care environment; family and community; school environment; business environment; and the academic and scientific societies.³⁴ The main effort of this strategy is focused on prevention; its direct emphasis is to promote healthy eating and on helping individuals avoid sedentary lifestyles.

In 2010, the *Global Strategy* was updated to the *National Health Strategy* objectives for the period from 2011 to 2020.³⁵ This strategy recognizes the need to advance certain goals in public health, including obesity, which has not had positive results in the past decade. As proposed, the NHS will maintain and improve national communication campaigns, increase public health messaging at the community and school education level, improve school feeding programs, promote the community, regional and national sports activities, establish more legal norms³⁶ to prevent the promotion of products harmful to health especially for children, and develop urbanization projects that facilitate physical activity with an emphasis on cities.

The Chilean government has taken other legal actions to restrict unhealthy food advertising to children under 14; extended postnatal care to six months postnatal and facilitated the maintenance of breastfeeding which is considered an important action that helps to prevent childhood obesity;³⁷ incorporated a national physical fitness test at Chilean schools for eight graders; and created the “Chooses to live healthy” program. This program is led by the Chilean first lady in order to promote: healthy eating, move your body, outdoor activities and strengthening the family. Chile’s First Lady has also emphasized that “Obesity is not only a health problem, it is also a cultural problem

related to the ways how we should organize ourselves as a society, as a country, in a cities and in the workplace to promote development in combination with healthy attitudes.”³⁸

Chilean Army and Obesity

Considering the reality that the Chilean Army draws its members from, and is representative of its society, it is prudent for military leaders to take notice of what is happening in the society as a whole in order to adopt strategies to help reduce the risk to health and security of those who serve. This approach also is important if there are increasing numbers of recruits or active military members who are overweight or obese. The associated health and readiness concerns may come to pose an increasing threat to the military given how these conditions are known to reduce physical capacity, increase the likelihood for the development of other diseases which eventually reduces readiness and the overall availability of the total force, as well as potentially increasing the total healthcare expenditures affecting the national economy and budget.

Chile's geography has particular characteristics that may impose even greater physical demands on Chilean soldiers. The usual deployment areas for land forces are mountain, desert and cold steppes (e.g., Patagonia). The Chilean mountains do not allow extensive use of vehicles so the majority of military movements are on foot, often occurring over 2,400 meters above sea level. This significantly increases of physical and physiological demands for fitness in the Chilean Army to address the reduced level of oxygen at higher elevations while carrying heavy loads of equipment and often doing so in the mountain cold.

Another physically challenging aspect of the Chilean geography is its desert area, the driest in the world, which covers a vast territory in the northern part of the

country. The high variation in temperature between day and night, dehydration and high radiation exposure, pose even greater challenge to soldiers with reduced levels of physical fitness.

Physical Activity Sphere

One of the Chilean Army's operational characteristics is to have its "readiness forces available."³⁹ In the area of physical activity, the army trains officers and noncommissioned officers (NCOs) as military physical instructors that allow them to: serve as advisers to their commanders in this area prepare individual physical programs and provides them knowledge to organize tournaments and competitions in various disciplines. Even though they contribute to increased physical activity today, their actions are limited because this mission is an extra task to their normal responsibilities.

However, to operate effectively within the challenge of a vast array of environmental demands posed by Chile's geography, 80% of active army personnel's must maintain optimal levels of physical fitness. To ensure a proper fitness of its active members, all personnel in the Army must take and pass a physical performance test two times during each year of service.⁴⁰ This test consists of running for 2,400 meters, pull-ups (men only), sit ups and push-ups (for women and men over 45 as optional).⁴¹ The minimum and maximum results are classified by age and sex; with both tests averaged annually obtain a final grade as *Outstanding Fit*, *Normal Fit*, and *Under Fit*. In addition, all active duty members must complete a general medical physical and receive medical clearance for authorization to complete their physical test. However, those who are determined to be overweight using the BMI may be further referred for additional laboratory testing and to see a nutritionist. However, there are no clear guidelines that require these actions. Those active duty personnel whose average on the two annual

physical tests is under the normal range have their service record annotated with an administrative penalty while those who exceed normal levels are congratulated in their record.⁴²

Cultural and Environmental Sphere

As for cultural and environmental aspects, military facilities are designed to meet the needs of those living in military barracks so the availability of lockers and showers for those who live outside is reduced. Another environmental factor is that while efforts are being made to provide sufficient parking of vehicles in each military unit, there is little interest in installing bicycle parking. Worse, it is more socially accepted and recognized go to work by car rather than by bike or walking, especially in the higher military ranks.

The sports facilities of military units have a tendency towards collective sports which is logical and appropriate to create camaraderie and esprit of corps, but too much of the equipment used within the indoor facilities is deficient in helping maintain appropriate fitness levels. Full equipment gyms or sports installations are primarily available in the military academies and in some branch schools which are located in the capital or large cities. Therefore, these factors combine to create a deficiency of sports facilities in provincial or remote army units, especially where immediate connection to a city is difficult. In those cases, personnel who are single, married and have their own families have little chance of avoiding a sedentary lifestyle due to isolated housing and inappropriate or inadequate sports facilities.

Moreover, active personnel too often adopt the same activities of most other members of Chilean society during the weekends. These activities mostly involve spending a lot of time sitting in front of the television, extensive use of the computer,

and sleep schedules that tend to favor staying up late at night and then sleeping in the next day. In summary, the environmental conditions too often reflect a more sedentary or inactive lifestyle for both the military and civilian members of Chilean society.

Health System Sphere

In this sphere, it is important to highlight that the Chilean Army has its own health system.⁴³ The Department of Preventive Medicine has the mission of "monitoring the health status of all personnel through annual examinations to detect and treat early disease where a timely treatment is the most effective."⁴⁴ The health system incorporates all active personnel, retired personnel who opt to remain in the Army Health System, and their relatives;⁴⁵ a total of over 120,000 users.⁴⁶ This system is financed through contributions from its members in such a way that any disproportionate increase in medical treatment has a direct impact on the whole system.

For example, if there are an increased number of obesity cases, the medical care required can produce an overload on the health system due to the increased demand for medical consultations and the increased number of diseases, which in turn causes a decline in profitability of the overall health care system. Consequently, efforts to prevent diseases should include all active members and their "families." With this approach, the problem is no longer strictly military, it helps to manage and spread the risk. Thus, prevention is a key activity to help protect the overall health care system.

The Chilean Health Army Command has a Department of Preventive Medicine whose mission is to control access to the Army.⁴⁷ However, the rules are not clearly defined with regard to a member of the Chilean military being overweight. For example, although medical examinations are required for admission into the army (including BMI), there is no set rejection limit. However, anyone who wants to serve as a professional

soldier, NCO or Officer, must take and pass the physical fitness test within the acceptable standards. There is no maximum limit set associated with an individual's BMI nor is any other method used for individuals who are overweight that restricts their entry or retention in military service. For example, if a person maintains a BMI that is over the established weight levels but that individual's laboratory results are normal, they may only receive a recommendation to lose weight, nothing more.

This creates a potential vulnerability for individual fitness and military readiness since accession into the military is not denied since those individuals are considered suitable for military service as long as they can achieve a minimum score on their physical test. While under current policy the Army is responsible for maintaining and reducing the weight of its active personnel, unfortunately well-defined processes and policies to guide and perform this task do not exist. Consequently, the determination of *who is in or out* for members already serving in the military is made by the doctor and based on their medical examination. In contrast, conscripts must only pass a medical examination, physical test standards do not apply.

Social Sphere

The persistent increase in child and adolescent obesity, which has its highest rate in the lower socioeconomic (SES) groups, is increasingly seen in the annual selection of conscripts⁴⁸ since the greatest percentage of conscripts belong to this segment of Chilean society. For many members of this SES group, military service is viewed as an opportunity to complete or further their education or obtain valuable job training that military service offers. Therefore, the Chilean Army may find that it will increasingly have to accept overweight conscripts who will require additional physical training and conditioning to bring them up to a body weight that is associated with

physical fitness and less risk for developing illnesses. Since the conscripted military service is a one year term, unless appropriate planning and strategies to deal with this problem are put in place, the task of transforming these individuals into an operationally fit, fighting force will become increasingly more difficult and may well begin to affect the army's overall readiness.

Strategic Leadership Challenge

Given the characteristics and effects associated with this complex and multifaceted problem that involves increasing numbers of the young adults within the Chilean population becoming more overweight and obese, it is important to explore how societal lifestyle may be shaping this problem. Therefore, national policies and programs are likely needed to appropriately address this growing problem that may eventually negatively impact on the national security and readiness of the Chilean military.

Accordingly, the Chilean Army has identified three lines of effort to help address these problems. First, it must give meaning to each service member's military role, the importance of maintaining both physical fitness and health to fulfill that role, and leverage both personal and institutional leadership to increase readiness and reduce the overweight/obesity trends within the military. Second, the Army must ensure it maintains a force that is focused on defense, security and international cooperation. Third, the Army must understand and apply its institutional social responsibility to its actions. This latter concept considers that "The institution is the foundation and reason for acceptance within society. It therefore requires, inevitably, to be known, respected, valued, loved and accepted by society. It is that social responsibility that helps is the viewed as an ethical commitment."⁴⁹

Thus, the Chilean Army can play an important institutional role in helping national efforts in reduce the trend toward increasing numbers of the Chilean population from becoming overweight and obese by helping everyone understand the potential threat to both national security and economic development (due to increased future health care costs). Importantly, the image of an army involved and participating in and valuing the social and cultural challenges that help strengthen both the national military readiness and the overall national security seems a very worthwhile contribution while demonstrating its social responsibility to the nation.

The Chilean statistics reveal that given the current trend, it is not just about implementing selected programs that target individuals who are overweight and obese. For example, while both military and civilians alike recognize the negative effects of obesity, most individuals find it difficult to make permanent lifestyle changes. To appropriately address this problem, it may prove helpful to the strategic leaders within the Chilean Army to confront it as a problem that is characterized as a Volatility, Uncertainty, Complexity, and Ambiguity (VUCA) problem, that is, one that displays, “Volatility, Uncertainty, Complexity, and Ambiguity.”⁵⁰

In considering each of these characteristics, the problem of increasing numbers of conscripts and others becoming overweight or obese demonstrates *volatility* and *uncertainty* given its “nature and rate of change within the environment”⁵¹ makes it difficult to predict accurately and in a timely manner (especially the mid- and long-term trends). Moreover the present interdependence and interconnection to the worldwide trends toward increased obesity reveals how the effects are too *complex* to completely understand and predict without considering the global influences that help account for

some of the problem. All the above features simultaneously generate an *ambiguous* environment since there are many differences in how the problem is being interpreted.⁵²

This interdependence and these interconnections are present in all levels of Chilean society and within the military. Thus the influence of the society over the army is not limited to politics and operational issues since there are other cultural trends that help explain some of the changes within the army. Even though the Chilean Army is characterized by its discipline and its adherence to a strong set of values over time and since the military exists within and to serve the society, it must, of necessity, reflect the cultural behaviors that help define that society. So it is neither possible nor recommended to break the interdependence between influences of society and the army. What is important is to have clarity of the values and to reinforce the positive forces within those values.

One of the strategic leader competencies is “envisioning the future.” A strategic leader must understand what is happening in the environment around the organization and then predict what is likely to become the new challenges in the future, and then establish a clear vision for how to “provide the direction, the concept, and the focus”⁵³ into coherent “strategic plans to address mid- and long-term programs designed to achieve the strategic aims.”⁵⁴

The chance to achieve this envisioned future depends on how well the leader shapes and influences the organization to take advantage of the opportunities and reduces or eliminates threats. Obesity is one of those current threats for the Chilean Army. However, at the same time, facing this problem offers many opportunities to

increase the relationship between the military and society; to contribute and help address what is increasingly a national challenge for both the nation and the military.

The challenge for leaders in this case is to achieve permanent changes in the social culture that helps set up programs and processes to ensure healthier diets and increased physical activity both within the Chilean Army and within Chilean society. If military families are not willing to change some aspects of their lifestyle, the many efforts to reduce the effects of obesity will not prove as successful. To ensure more complete and enduring success will require both acceptance and promotion by active and retired members of the military and their families.

To date, the governmental programs have not been as effective as hoped in producing the needed changes in lifestyles. It is important that the Chilean Army learn from what has worked or not worked well within Chilean society. The Army leaders are recommended to *lead the change*, in their own environment since it is well known that “Only leadership can blast through the many sources of change. Only leadership can motivate the actions needed to alter behavior in any significant way. Only leadership can get change to stick by anchoring it in the very culture of an organization.”⁵⁵

Given the importance to both national security and the potential risk it poses to the national economy if trends continue to rise, the increased numbers of overweight or obese members of Chilean society and within the military offers a great target for change. Since leaders help set the tone in any organization, *leaders must lead by example*. Indeed, “nothing undermines the communication of a change vision more than behavior on the part of key players that seems inconsistent with the vision.”⁵⁶ Leaders have a variety of resources along with a mix of incentives and pressure they can bring

to bear to help reduce the numbers of overweight and obese active personnel.

However, to be effective, they have to be implemented without exception. They will help create the perception that will help bring about the desired change.

An important example is provided in an interview with a retired Sergeant First Class from the U.S. Army, emphasizing the important role of leaders “There are plenty of command sergeant majors, colonels, lieutenant colonels, majors, sergeant majors and master sergeants that should be the first to go. If you have overweight leaders that stay in, but lower enlisted are booted, the double standard is perpetuated like it has been for decades.”⁵⁷

This statement captures well the extremely important role leaders play in setting the example in order to avoid creating negative perceptions. It also reinforces how all leaders at all levels must participate in leading and achieving change.

Leading by example gives leaders credibility and helps establish consensus building inside the organization; demonstrating that change is necessary because “major change is usually impossible unless most employees are willing to help.”⁵⁸ The consensus building is important and helps direct the anchoring of the desired changes; especially those that are related to the cultural changes primarily because “culture is not something that you manipulate easily.”⁵⁹ The consensus building also helps to establish a deep connection with all the members within the organization. But “communication comes in both words and deeds”⁶⁰ and most of the time changes are not readily perceived in short-term. It is for this reason that strategic leaders must work hard to build and maintain consensus by phases. Once the first goal is achieved, the leader reinforces the change, and then reinforces and/or builds new consensus to set

conditions for success during the following phases until the desired cultural practices become the new norm within the organization.

Proposals

Considering the interrelated causes face this problem, the solutions of necessity must focus on changing both behavior and culture. Given the complexity of the problem, there is not likely a unique solution; rather both intrinsic and extrinsic activities must be considered. Those activities are grouped into the following domains or perspectives: health, physical activity, and environmental. The latter, the environmental, is further grouped into social, familiar and cultural behavior; domains which usually require some modification in order to achieve a permanent behavioral change.

First of all, for over thirty years, the U.S. Army War College offered a model program, the Army Physical Fitness Research Institute (APFRI), that focused senior leader development and education in this important area. That program recently transitioned to a program that “addresses the Physical, Cognitive and Moral Human Dimensions of leader development.”⁶¹ The former APFRI program was the basis for a proposal made by LTC Cristian Vial in his Strategic Research Project (2012) named *Leadership in a Culture of Fitness in the Chilean Army*.⁶² In his proposal, LTC Vial proposed the establishment of a *Culture of Fitness* Program in the Chilean Army Academy to focus on developing and educating senior officers similar to the U.S. Army War College’s APFRI program. The Culture of Fitness Program is generally structured and composed of the follow three programs:

- Executive Health Program: “It is orientated toward indicators of physiological resiliency and promotes making healthy lifestyle changes.”⁶³

- Executive Nutrition Program: “It offers nutritional guidance may include dietary guidance, identification of individual high risk factors and recommended interventions to enhance performance.”⁶⁴
- Executive Fitness Program: “It provides individual assessment, training, education, and coaching in the physical domain.”⁶⁵

The program offers a holistic, leader focused approach to help reinforce the leader’s role in maintaining fitness and readiness which will, by example, help to reduce the incidence of those who are overweight and obese. Consequently, it is proposed to build on Vial’s earlier proposal to develop senior leaders by expanding this program to the entire Chilean Army, to include retirees and family members.

This comprehensive program could be implemented in all the Chilean Army according within the framework outlined below:

- Develop a program named the “***Health and Fitness Center***” with the subprograms described below. Its primary mission will be to promote healthy lifestyles that allow for an appropriate balance of physical, mental and social fitness; focused on increasing the welfare for army personnel and their families.
- The organization staff should be multidisciplinary, focused on fitness and health, and be composed of military, health and fitness education specialists. In order to support the professional military education programs, a cadre of permanently assigned individuals is needed while other specialists may need to surge in to help complete assessments and screenings on all individuals. One of these should serve as a liaison officer from Department of Preventive

Medicine of the Chilean Army Health Command to help integrate the Center's staff, coordinate activity, and share current health and fitness information and perspectives.

- The Health and Fitness Center is recommended for co-location with the Chilean Military Physical Education School in order to coordinate physical activities between the two organizations. However, in order to ensure the Center maintains its military readiness focus, it should belong to the Education Division. This will allow for easier coordination of the education programs in other schools and Academies. It will also allow an opportunity to maintain a research data base to determine the program's measure of effectiveness and help disseminate the knowledge and lessons learned to other military programs.
- An initial "proof of principle" pilot test is recommended at the Chilean Army Academy. This would allow an emphasis on ensuring leaders understand and help foster improved physical readiness, allow the program to gain valuable experience, and support the students and their families.
- Within two years, each Division should establish Health, Nutrition and Fitness program sub-centers along with establishing advisors to the commander for the overall program implementation. This will allow each division to adapt its program support to the unique environmental demands and conditions according their mission, geographic situation, climate, and food consumption factors related to that region. The ability to ensure each unique group has a unique program to address their needs is critical for the success of this

program. This will also serve as an effective way to empower each senior leader to maintain and ensure the efficient conduct of actions to improve health, to increase readiness personnel and to reduce health cost that in the end will contribute to a more fit and ready military as well as a more affordable Army Health System.

The proposals provide a framework for how the Chilean Army environmental culture must change in order for the military and its members to achieve and sustain permanent lifestyle changes. Within that framework, three different perspectives (Health, Physical Activity and Environmental or Socio-Cultural) must be considered:

Health Perspective

- Requiring the integration of information concerning who is overweight and obese and ensure it is monitored as a disease monitoring process carried out by Department of Preventive Medicine. This would involve each participant completing an annual laboratory exam and contributing to build a complete data base.
- Establish, publish, and enforce minimal overweight standards concerning who can apply to the Army. This action will reduce the costs associated with losing talented individuals to weight control programs and will help to establish a new precedent about the standards that are now required during the military career.
- Require the Army Health Command to develop statistical records of the readiness and health of individuals to allow for the monitoring of selected diseases. This will improve both quality of care and the ability to track

differences in disease risk between the medical care of active personnel vs. retirees and their families. The assessments of readiness would include aerobic, stability, endurance, and stamina and would involve an update of the individual's medical record.

- Engage and support national campaigns to lower the risk of obesity prevention in military medical centers through the promotion of breastfeeding, increased consumption of healthy food (e.g., fish, vegetables and fruit; water over sugared drinks) with a particular emphasis on combating childhood obesity.

Physical Activity Perspective

- Leaders at all levels must firmly support these activities through their presence and participation. They must participate and promote the activities of the “Chooses to Live Healthy” program while also promoting family involvement, not just individual participation.
- Leverage both the military units, and Health and Fitness sub centers as they are developed, to organize inexpensive recreational activities such as hiking, familiar cycling activities, and running for adults and children.
- The Army Wellness Command must also establish agreements with civilian national groups or local gyms that allow military families (active, retired and family) to access these services at a minimal cost. For those units too far away from population centers, or in areas with poor infrastructure, the Army Wellness Command must consider building gyms with the appropriate facilities for the execution of aerobic activity, muscle development and group

exercise classes (e.g., Spinning, Aerobics, TRX, Crossfit-like exercises, etc).

Creative uses of cycling could help promote low knee impact activities (e.g., cycling), while those military bases near the ocean might increase their emphasis on water sports.

- Each active member of the military should be required to maintain a “**personal training program**,” which should be the minimum goal considered to achieve a normal fitness level for completing the physical training test. Military physical instructors will play an essential role for this action. Therefore, it is very important to assess the current workload for military physical instructors and physical training in each unit and assign authorizations for personnel based on those identified requirements.
- Unit and organizational recreation programs need to encourage more activities that families can engage in such as hiking or short excursions; taking advantage of the more aerobically-challenging mountainous terrain to both enjoy the outdoor activity and become more physically ready.
- Increased encouragement and support for those military personnel who are participating in marathons and other running competitions throughout the country. Institutional leaders must lead the way and be seen participating and training for these competitions. These kinds of actions are force multipliers, achieving higher than anticipated effects and results.

Environmental or Socio-Cultural Perspective

What is proposed is starting to “take shape” around the world since:

Two-thirds of employers cite the poor health habits of their employees as the biggest challenge to managing healthcare costs,

and 91% of employers believed that they could reduce healthcare costs by influencing employees to adopt healthier lifestyles. As a result, more companies are starting wellness programs as they seek to reduce their annual healthcare expenditure.⁶⁶

Conclusion

Given the geographic, cultural, and environmental diversity within Chile, it is increasingly clear that the strategies to address the problem must be established in accordance with the characteristics of the group to that you want to influence. With the Chilean Army, the main effort of this campaign plan must be aimed at the younger generation of active members as well as the children of military personnel.

Environmental challenges should not be allowed to create an excuse since that is the reality of any soldier's life. The ability to create a healthy environment has no limitation other than the limits to one's own imagination and strength to break through the social and cultural paradigms of "that's the way we've always done it."

- Small wins are needed. It is feasible to promote going to work by cycling, jogging or walking, but it is essential to modify existing facilities for lockers and showers. The best way to defeat bias in this issue is through the leader's personal example.
- Leaders can also order other changes that are directed at improving the type of food available for sale in cafeterias. This should be in alignment with other government efforts to replace products which contain high levels of sugar and fat in favor of the more bountiful fruits and salads which are found in Chile.
- Promoting and encouraging individuals to bring their own healthy food will require changes to both culture and habits. For example, while bringing your

own lunch is normal in most other countries, Chilean military culture creates their own biases (i.e., they are seen as actions of a “tightwad person”).

- Comprehensive education at all levels is needed; with changes in the curricula of the academies and combat arms branch schools. The curriculum should integrate the specific knowledge about the importance of nutrition and prevention in military operations, allowing for the generation of creative ideas around increasing consumption of healthy nutrition over junk food in the military service members.
- Moreover, military units can use existing organizations such as the “ladies on gray” group and the Foundation of Officers’ Spouses to conduct educational talks about the important role of fitness for both service members and their families, with the intention to achieve recognition of the problem both in the military and to give the problem special emphasis within the family environment.
- Inspiring and bringing about permanent behavioral changes in the Chilean culture (or any culture) is not achieved by “ordering” individuals to exercise more or eat right. The best way for leaders to “influence” and change behavior is to model the behavior and maintain the commitment to do so themselves.
- The social network offers an entirely new opportunity for transmitting information and educating members about recreational, sports and healthy leisure activities. Given the geographic dispersion of the Chilean Army, social media and the social network may prove a very viable and cost effective way

to both educate and inspire the needed changes. Considering the wide coverage of the internet in the country, this medium may offer one of the best conditions to promote greater family involvement. It is also important to continually update the website with extensive photographic and audiovisual material. When done effectively, this may serve as a great motivation tool to help promote changes in behavior.

Strategic leaders of the Chilean Army have the vision that allows them to figure out threats on national security. There is ample evidence that the increasing effects of obesity and overweight, in general and especially in children, is one such threat that can adversely impact on Chile and the Chilean Army's critical mission to maintain its military readiness. By their presence and example, the leaders of the Chilean Army have helped to make it one of the most prestigious militaries in the region. To remain that way, this paper argues that it must adopt and maintain a holistic view of the overweight, obesity, and lack of fitness in the Chilean population and military. By adopting a proactive attitude, the Chilean Army can generate concrete and significant results within its own organizational cultural that will then radiate positive changes within the Chilean society as a whole. That truly is a strategic leader challenge worth meeting.

Endnotes

¹ Finucane MM, Stevens GA, Cowan MJ, et al. "National, regional, and global trends in body-mass index since 1980: systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9.1 million participants," *The Lancet*, Vol. 377 (February 12, 2011): 557-67.

² Kelly T, Yang W, Chen CS, Reynolds K, He J., "Global burden of obesity in 2005 and projections to 2030," *International Journal of Obesity*, July 8, 2008, <http://www.nature.com/ijo/journal/v32/n9/pdf/ijo2008102a.pdf> (accessed February 10, 2013).

³ Centers for Disease Control and Prevention, “CDC and Noncommunicable Diseases Around the World, Center,” September 16, 2011. <http://www.cdc.gov/globalhealth/ncd/> (accessed December 28, 2012).

⁴ Ibid.

⁵ Centers for Disease Control and Prevention, “*The Problem of Noncommunicable Diseases and CDC’s Role in Combating Them*,” September 16, 2011. <http://www.cdc.gov/globalhealth/ncd/overview.htm> (accessed December 28, 2012).

⁶ Lowell D’Souza, “Advertising and its Dominant Influence in our Lives,” <http://marketingbones.com/how-advertising-is-a-dominant-influence-in-our-lives/> (accessed February 13, 2012).

⁷ Steven Bodzin, “Obesity weighing on America Latin America, that is,” *The Christian Science Monitor*, September 04, 2012, <http://www.csmonitor.com/World/Americas/2012/0904/Obesity-weighing-on-America-Latin-America-that-is> (accessed October 31, 2012).

⁸ U.S. Department of Health and Human Services, “*National Health and Nutrition Examination Survey*,” <http://www.cdc.gov/nchs/data/nhanes/databriefs/adultweight.pdf> (accessed October 30, 2012).

⁹ Chilean Department of Health, Chilean National Health Survey 2010, <http://www.redsalud.gov.cl/portal/url/item/99bbf09a908d3eb8e04001011f014b49.pdf> (accessed October 20, 2012).

¹⁰ Steven Bodzin, “Obesity weighing on America Latin America, that is”.

¹¹ Chilean Department of Health, National Health Strategy 2011-2020, <http://www.eligevivirsano.cl/wp-content/uploads/2012/01/Metas2011-2020.pdf> (accessed December 11, 2012).

¹² List of Countries by Population Size, Countries of the World, <http://www.worldatlas.com/aatlas/populations/ctypopls.htm> (accessed February 10, 2013).

¹³ G. Sandoval and S. Fuentealba, “OCDE: Chile es el sexto país con más obesidad infantil,” *Diario La Tercera*, February 24, 2012. <http://www.eligevivirsano.cl/wp-content/uploads/2012/02/120223-Ocde-Chile-6-en-ranking-obesidad.pdf> (accessed December 13, 2012).

¹⁴ Ibid.

¹⁵ Raquel Barros, Chilean endocrinologist and child obesity specialist at INTA cited in Mara Espinosa, “Health-Chile: Obesity, The Heavy Price of Economic Development”, Inter Press Service News Agency, June 2005, <http://www.ipsnews.net/2005/06/health-chile-obesity-the-heavy-price-of-economic-development/> (accessed December 09, 2012).

¹⁶ Francis Delpeuch, others, *Globesity a Planet Out of Control?*, (London, UK: Earthscan, 2009), 75.

¹⁷ Dr. Tito Pizarro, Head of the Chilean Health Ministry's Department of Nutrition cited in Mara Espinosa, "Health-Chile: Obesity, The Heavy Price of Economic Development".

¹⁸ Steven Gortmaker and others, "Obesity 4: Changing the future of obesity: science, policy and action," *The Lancet.com*, Vol 378 (August 27, 2011), http://www.hsph.harvard.edu/research/prc/files/gortmaker_sl.swinburn.ba.levy.d.carter.r.mabry.pl.finegood.dt.huang.t.march.t.moodie.ml.marjory.l.2012.pdf (accessed December 09, 2012).

¹⁹ Geoffrey Lawrence, K Lyons and T Wallington, *Food Security and Sustainability* (London, UK: Earthscan, 2010), 151.

²⁰ Source, <http://www.corre.cl/> (accessed December 09, 2012).

²¹ Chilean Department of Health, Chilean National Health Survey 2010.

²² Chile has established three categories of education level, Low, Medium and High, according to studies finished. Basic education (1st to 8th grade), Medium education (Secondary) and High level education (University or career or equivalent). Timothy Miller, "Modelos demográficos para la proyección de la demanda del sector social," <http://www.eclac.org/publicaciones/xml/9/32889/serie66-esp.pdf> (accessed February 13, 2013).

²³ Ibid.

²⁴ Steven Bodzin, "Obesity weighing on America Latin America, that is".

²⁵ "McDonald's cumple 20 años en Chile en noviembre," *Terra*, November 16, 2010, http://economia.terra.cl/noticias/noticia.aspx?idNoticia=201011161408_INV_79389202 (accessed December 05, 2012).

²⁶ "Expertos entregan consejos para que Chile baje de peso en 2011," *Diario El Mercurio*, January 9, 2011, <http://mercurio.vlex.cl/vid/expertos-entregan-consejos-baje-peso-238430862#> (accessed December 10, 2012).

²⁷ Geoffrey Lawrence, K Lyons and T Wallington, *Food Security and Sustainability*.

²⁸ Lawrence J. Cheskin, C. Roberts and S Margolis, *Nutrition and Weight Control for Longevity*, (Baltimore, MD: Johns Hopkins Medicine, 2010), 47.

²⁹ Geoffrey Lawrence, K Lyons and T Wallington, *Food Security and Sustainability*, 152-153.

³⁰ Lawrence J. Cheskin, C. Roberts and S Margolis, *Nutrition and Weight Control for Longevity*, 53.

³¹ "Obesity In Children And Teens," American Academy of Child & Adolescent Psychiatry March 2011. http://www.aacap.org/cs/root/facts_for_families/obesity_in_children_and_teens (accessed December 10, 2012).

³² William Christenson, Amy Dawson Taggart, and Soren Messer-Zidell, *Too Fat to Fight*, (Washington, DC: Mission: Readiness, 2010), 2.
http://cdn.missionreadiness.org/MR_Too_Fat_to_Fight-1.pdf (accessed October 21, 2012).

³³ Chilean Department of Health, “Estrategia Global contra la Obesidad, EGO,”
http://www.redsalud.gov.cl/archivos/alimentosynutricion/ego/EGO_CHILE.pdf?cbc=56,57,202&id=1659 (accessed November 18, 2012).

³⁴ Ibid.

³⁵ National Health Strategy, “Health goal to decade 2011– 2020,”
<http://www.eligevivirsano.cl/wp-content/uploads/2012/01/Metas2011-2020.pdf> (accessed November 17, 2012).

³⁶ Chilean National Congress, <http://www.leychile.cl/Navegar?idNorma=71271> (accessed December 04, 2012). The enactment of the law 20,606 and the increase in health regulations for food have together helped to regulate the labeling of foods, prohibits the sale of food with high levels of calories, fat, saturated fat, sugar and salt within schools, and provides for the inclusion of content on nutrition and physical activity at all levels of education.

³⁷ Steven Bodzin, “Obesity weighing on America Latin America, that is,” 3.

³⁸ Mara Espinosa, “*Health-Chile: Obesity, The Heavy Price of Economic Development*”.

³⁹ Chilean Department of Defense, “Book of National Defense of Chile 2010”, 248.
http://www.defensa.cl/archivo_mindef/Libro_de_la_Defensa/2010/2010_libro_de_la_defensa_5_Parte_Los_Medios_de_la_Defensa_Nacional.pdf (Accessed December 16, 2012).

⁴⁰ Chilean Army, *Regulation Physical Test*, CDIE-80001, (La Reina, Santiago: Doctrine Division, 2010), 1-2.

⁴¹ Ibid., 2-2.

⁴² Ibid., 3-2.

⁴³ Chilean Armed Forces Health System is set by law 19.465, Ley Sistema de Salud de las FF.AA. de Chile, http://sanidad.fach.cl/pdf/ley_19465.pdf (accessed December 12, 2012).

⁴⁴ Chilean Air Force, *Reglamento para los Servicios de medicina Preventiva de las Fuerzas Armadas*, DNL 928, 1982.
<http://www.emol.com/documentos/archivos/2012/09/12/20120912114550.pdf> (accessed December 8, 2012).

⁴⁵ Command Health of the Army, http://www.cosale.cl/?page_id=180 (accessed December 8, 2012).

⁴⁶ General of Brigade Humberto Oviedo cited in “Ejército y MINSAL firmaron convenio marco en salud,” Chilean Army Home Page.
http://www.ejercito.cl/detalle_noticia.php?noticia=5123 (accessed December 10, 2012).

⁴⁷ Law 12,911 from 1958, add cancer at law 6,174.
<http://www.leychile.cl/Navegar?idNorma=27280> (accessed December 12, 2012). These laws help to eliminate the resulting carriers of some of the conditions (e.g., 6,174 includes cancer) prior to accession into the Chilean Army.

⁴⁸ Chilean Army has around 21,000 conscripts every year. Chilean Department of Defense, *Book of National Defense of Chile 2010*, 233.
http://www.defensa.cl/archivo_mindef/Libro_de_la_Defensa/2010/2010_libro_de_la_defensa_4_Parte_Politica_Militar.pdf (Accessed December 15, 2012).

⁴⁹ Translate from Spanish by the author, Chilean Army Home Page,
http://www.ejercito.cl/responsabilidad_antecedentes.php (accessed December 13, 2012).

⁵⁰ T. Owen Jacobs cited by Stephen J. Gerras, *Strategic Leadership Primer*, 3rd ed. (Carlisle Barracks, PA: U.S. Army War College, 2010), 11.

⁵¹ Ibid.

⁵² Ibid.

⁵³ Stephen J. Gerras, *Strategic Leadership Primer*, 3rd ed., 31.

⁵⁴ Ibid.

⁵⁵ John P. Kotter, *Leading Change*, (Boston, Massachusetts: Harvard Business Review Press, 1996), 30.

⁵⁶ Ibid., 97.

⁵⁷ Lance M. Bacon, "Getting fierce on body fat, Army ramps up weight-related discharges," *Army Times*, Noviembre 12, 2012.

⁵⁸ John P. Kotter, *Leading Change*.

⁵⁹ Ibid., 156.

⁶⁰ Ibid., 10.

⁶¹ US Army War College, *APFRI Leadership, Health and Fitness Guide*, (Carlisle Barracks, PA: Army Physical Fitness Research Institute, Edition 8, June 2011), 6.

⁶² Cristian Vial, *Leadership in a Culture of Fitness in the Chilean Army*, (Carlisle Barracks, PA: U.S. Army War College, March 22, 2012).

⁶³ Ibid., 22.

⁶⁴ Ibid.

⁶⁵ Ibid.

⁶⁶ Shari L Barkin, William Heerman, Michael Warren, Christina Rennhoff, "Millennials and the World of Work: The Impact of Obesity on Health and Productivity", *Journal of Business and Psychology*, March 7, 2012, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2868992/> (accessed December 14,2012).